

Name: _____

p1107: Factoring by Grouping (v1)

Consider the expression:

$$6x^2 + 4x + 21x + 14$$

Notice there is one quadratic term, two linear terms, and one constant. Also, notice that $6 \cdot 14 = 4 \cdot 21$. Thus the expression is ready to be factored by grouping.

1. For the two first terms, $6x^2$ and $4x$, the greatest common factor is $2x$. Factor it out.

$$2x(3x + 2) + 21x + 14$$

2. For the last two terms, $21x$ and 14 , the greatest common factor is 7 . Factor it out.

$$2x(3x + 2) + 7(3x + 2)$$

3. Now we have two terms, $2x(3x + 2)$ and $7(3x + 2)$, and both terms share a factor of $(3x + 2)$, so we can apply distributive property... backwards... to factor the expression.

$$(3x + 2)(2x + 7)$$

Question 1

Factor by grouping:

$$20x^2 + 8x + 15x + 6$$

Question 2

Factor by grouping:

$$14x^2 + 35x + 4x + 10$$

Question 3

Factor by grouping:

$$35x^2 + 14x + 10x + 4$$

Question 4

Factor by grouping:

$$9x^2 + 21x - 6x - 14$$

Question 5

Factor by grouping:

$$16x^2 + 24x - 6x - 9$$